



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,860	11/16/2005	Francois Giordano	12400-037	3997
757 7590 01/21/2009 BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610				
EXAMINER				
PATTON, SPENCER D				
ART UNIT		PAPER NUMBER		
4184				
MAIL DATE		DELIVERY MODE		
01/21/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/531,860

**Applicant(s)**

GIORDANO, FRANCOIS

**Examiner**

SPENCER PATTON

**Art Unit**

4184

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)  
Paper No(s)/Mail Date 12/23/2008
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The amendment filed December 23, 2008 has been entered. Claims 1-21 remain pending in the application. The previous objections to the drawings are withdrawn in light of Applicant's amendments to Figures 1, 3, and 4. The previous objection to the title is withdrawn in light of Applicant's amendment to the title. The previous objections to the specification are withdrawn in light of Applicant's amendment to the specification. The previous objection to claim 21 is withdrawn in light of Applicant's amendment to claim 21.

***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. **Claims 1, 2, 5-9, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al (US Patent No. 5,977,653) in view of Bauch et al (GB Patent No. 2,370,671).

Schmid et al teaches:

**Re claim 1.** A vehicle safety arrangement for a vehicle, the arrangement comprising:  
a sensor unit (impact detection configuration 20, figure 3) comprising at least one sensor responsive to acceleration (acceleration sensor 5, figure 3), the sensor unit having a signal processor for sampling data gathered by the one or more sensors (control unit 3, figure 3);

at least one actuator for activating a safety device, the actuator being located remotely from the sensor unit (firing element 100, figure 3); and

a control unit located remotely from the sensor unit and from the actuator (central configuration 10, Figure 3), the control unit being operable to receive information from the sensor unit (column 5, lines 30-36) and to transmit an actuation command to the actuator to activate the safety device (column 5, lines 42-46), wherein the control unit comprises no sensor responsive to acceleration (Figure 3, and column 7, lines 45-48; all acceleration sensors have been removed from the central configuration 10).

Re claims 1 & 2.

Schmid et al fails to specifically teach: (re claim 1) the sensor unit being located substantially along a central longitudinal line of the vehicle; (re claim 2) wherein the sensor unit is located on a central tunnel of the vehicle.

Bauch et al teaches locating an acceleration sensor in the tunnel portion of a vehicle to obtain lateral acceleration readings of the vehicle (page 7, lines 17-24).

In view of Bauch et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al, (re claim 1) the sensor unit being located substantially along a central longitudinal line of the vehicle; (re claim 2) wherein the sensor unit is located on a central tunnel of the vehicle; since Bauch et al teaches an

accelerometer in the tunnel portion of a vehicle to effectively measure the lateral acceleration of the vehicle.

Schmid et al, as combined with Bauch et al as discussed above, also teaches:

Re claim 5. A safety arrangement according to Claim 1, wherein the signal processor is operable to transmit the sampled data to the control unit (column 5, lines 30-36).

Re claim 6. A safety arrangement according to Claim 1, wherein the signal processor is operable to perform a crash algorithm, which causes the signal processor to instruct the control unit to transmit an actuating command to the actuator (column 5, lines 30-36 and column 5, lines 41-46).

Re claim 7. A safety arrangement according to Claim 1, wherein the signal processor is operable to receive the output of a decision algorithm, which determines whether the vehicle is in a crash situation (column 5, lines 20-23. This transmission line 102 makes the control unit 3 of the impact detection configuration 20 operable to receive the output of the central configuration's decision regarding the vehicle's crash status).

Re claim 8. A safety arrangement according to Claim 7, wherein the decision algorithm is performed by the control unit (column 5, lines 20-23 and column 6 lines 6-14).

Re claims 9 & 15.

Schmid et al fails to specifically teach: (re claim 9) wherein the signal processor is operable to receive data from additional remote sensors; (re claim 15) further comprising at least one left side sensor on a left side of the vehicle and at least one right side sensor on a right side of the vehicle.

Bauch et al teaches sensors 18 and 20 on the left and right sides of the vehicle in figure 1. These sensors feed data to controller 14 which acts as the signal processor (page 5, lines 4-7) to perform a distributed crash prediction algorithm (page 6, lines 20-30).

In view of Bauch et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al, (re claim 9) wherein the signal processor is operable to receive data from additional remote sensors; (re claim 15) further comprising at least one left side sensor on a left side of the vehicle and at least one right side sensor on a right side of the vehicle; since Bauch et al teaches left and right sensors as a more complete accident detection method which allows for a distributed crash prediction algorithm.

**4. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of Burton et al (UK Patent No. GB 2,292,126).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 3) wherein the sensor unit comprises at least two sensors responsive to acceleration, which are configured to measure at least longitudinal and lateral acceleration of the vehicle; (re claim 4) wherein the at least one sensor responsive to acceleration is configured to measure vertical acceleration of the vehicle.

Burton et al teaches vertical, normal, and transverse accelerometers as part of a system used to enact safety devices in a motor vehicle (page 1, second paragraph; and page 1, fifth paragraph through page 2, first paragraph)

In view of Burton et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 3) wherein the sensor unit comprises at least two sensors responsive to acceleration, which are configured to measure at least longitudinal and lateral acceleration of the vehicle; (re claim 4) wherein the at least one sensor responsive to acceleration is configured to

measure vertical acceleration of the vehicle; since Burton et al teaches that vertical, normal and transverse accelerometers are useful in determining whether certain vehicle safety systems should be deployed.

**5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of Hermann et al (US Patent No. 6,113,138).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 10) wherein the sensor unit comprises one or more sensors operable to measure an angular velocity of the vehicle around a longitudinal axis thereof.

Hermann et al teaches a rotational speed sensor for detecting a roll-over movement about the longitudinal axis of the vehicle, as part of a vehicle safety system (column 1, lines 44-52).

In view of Hermann et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 10) wherein the sensor unit comprises one or more sensors operable to measure an



angular velocity of the vehicle around a longitudinal axis thereof; since Hermann et al teaches that sensors which measure the angular velocity of a vehicle about its longitudinal axis can indicate the vehicle is rolling over.

**6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of Foo et al (US Patent No. 6,459,366).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 11) wherein the actuator comprises an ignitor for igniting a charge to activate the safety device.

Foo et al teaches a squib and the components necessary to ignite the squib as a known method of activating an airbag in a vehicle (column 1, lines 19-24)

In view of Foo et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 11) wherein the actuator comprises an ignitor for igniting a charge to activate the safety device; since Foo et al teaches squibs as a known method which is commonly used in the art.

**7. Claims 12-14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of Lewallen et al (US Publication No. 2002/0084636).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 12) wherein the control unit comprises one or more capacitors configured to store sufficient energy to cause the actuator to activate the safety device; (re claim 13) wherein the discharge of the one or more capacitors comprises the actuation command; (re claim 14) wherein at least one actuator is located in a unit that also comprises a capacitor configured to store energy to activate the safety device, the capacitor being discharged to activate the safety device in response to the actuation command; (re claim 16) wherein the control unit is connected to a main battery of the vehicle, and supplies power to the sensor unit and to the actuator.

Lewallen et al teaches the automotive battery as a power source for an airbag system as well as using capacitors in either the control circuitry or actuators as a backup for when the power source becomes disconnected (paragraph 16).

In view of Lewallen et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 12) wherein the control unit comprises one or more capacitors configured to store sufficient energy to cause the actuator to activate the safety device; (re claim 13) wherein the discharge of the one or more capacitors comprises the actuation command; (re claim 14) wherein at least one actuator is located in a unit that also comprises a capacitor configured to store energy to activate the safety device, the capacitor being discharged to activate the safety device in response to the actuation command; (re claim 16) wherein the control unit is connected to a main battery of the vehicle, and supplies power to the sensor unit and to the actuator; since Lewallen et al teaches an automotive battery as the known prior art method for powering an airbag system, as well as placing capacitors with either the control circuitry or airbag actuator to power the actuating device if the main vehicle battery becomes disconnected.

**8. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of McCall et al (US Patent No. 6,522,992).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 17) wherein the sensor unit has a smaller volume than that of the control unit; (re claim 18) wherein the sensor unit has a volume less than half that of the control unit; (re claim 19) wherein the sensor unit has a smaller mass than that of the control unit; (re claim 20) wherein the mass of the sensor unit is less than half that of the control unit.

McCall et al teaches a core inertial measurement unit which is miniaturized and light weight (column 3, lines 14-22).

In view of McCall et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 17) wherein the sensor unit has a smaller volume than that of the control unit; (re claim 18) wherein the sensor unit has a volume less than half that of the control unit; (re claim 19) wherein the sensor unit has a smaller mass than that of the control unit; (re claim 20) wherein the mass of the sensor unit is less than half that of the control unit; since McCall et al teaches a relatively small inertial measurement unit, and in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984) the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. In this case McCall et al teaches a

small and light inertial measurement unit (these characteristics are known to be desirable in automobile applications) which will perform the same as the sensor unit of the application under consideration. The control unit being twice as large or twice as heavy as the sensor unit has no impact on the performance of the system.

**9. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schmid et al in view of Bauch et al as applied to claim 1 above, and further in view of Ebeling et al (US Patent No. 6,145,389).**

The teachings of Schmid et al in view of Bauch et al have been discussed above.

Schmid et al in view of Bauch et al fails to specifically teach: (re claim 21) wherein the sensor unit is provided on a single microchip.

Ebeling et al teaches combining an accelerometer with a signal processor onto the same integrated circuit because they are both made using the same technology (column 5, line 66 through column 6, line 2), wherein this signal processor samples data from the accelerometer (column 6, lines 27-30).

In view of Ebeling et al's teachings, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, with the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, (re claim 21) wherein the sensor unit is provided on a single microchip; since Ebeling et al teaches combining an accelerometer and a signal processor onto the same integrated circuit since they are

constructed in the same manner, which would reduce the number of individual components necessary for manufacture.

***Response to Arguments***

10. The previous objections to the drawings are withdrawn in light of Applicant's amendments to Figures 1, 3, and 4. The previous objection to the title is withdrawn in light of Applicant's amendment to the title. The previous objections to the specification are withdrawn in light of Applicant's amendment to the specification. The previous objection to claim 21 is withdrawn in light of Applicant's amendment to claim 21.

11. Applicant's arguments filed December 23, 2008 have been fully considered but they are not persuasive.

**Re claims 1, 2, 5-9, and 15.** Schmid et al (US Patent No. 5,977,653) discloses the additional limitation of claim 1, "wherein the control unit comprises no sensor responsive to acceleration" in Figure 3 as well as column 7 lines 45-48. Schmid et al discloses that the acceleration sensors are located in the impact detection configuration 20, as opposed to the central configuration 10, both of Figure 3.

**Re claims 3, 4, 10, 11, 12-14, and 16-21.** Applicant's argument that the rejections of claims 3, 4, 10, 11, 12-14, and 16-20 rely on allowable claim 1 is not persuasive since claim 1 is properly rejected under 35 U.S.C. 103(a) by Schmid et al in view of Bauch et al.

**Re claims 17-20.** McCall et al discloses an IMU which can be used as the sensor unit in the vehicle safety arrangement for a vehicle as taught by Schmid et al in view of Bauch et al, thus the control unit will still be separate from the sensing unit as discussed in response to claim 1. Additionally McCall et al suggests miniaturization of such a sensor to those of ordinary skill in the art at column 3, lines 14-22. This suggestion and *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984) as discussed above in response to claims 17-20, and in MPEP 2144.04 (IV) (A) Changes in Size/Proportion, renders the specific relations of volume and mass of the sensor unit to the control unit recited in claims 17-20 obvious. Furthermore, applicants have not shown that the claimed relative sizes are critical or produce any unexpected results.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SPENCER PATTON whose telephone number is (571)270-5771. The examiner can normally be reached on Monday-Thursday 7:30-5:00; Alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jared Fureman can be reached on (571)272-2391. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SPENCER PATTON/  
Examiner, Art Unit 4184

/Jared J. Fureman/  
Supervisory Patent Examiner, Art  
Unit 4184

January 5, 2009